

REMARKS

Reconsideration and allowance of the present patent application based on the following remarks are respectfully requested.

By this Response, no claims are added, amended or cancelled. Accordingly, after entry of this Response, claims 1-7, 9 and 11-20 will remain pending in the patent application.

Claims 1 and 11 were rejected under 35 U.S.C. §103(a) based on Cox *et al.* (U.S. Pat. No. 6,420,716) (hereinafter “Cox”) in view of Shigeo (JP 6-302495). The rejection is respectfully traversed.

MPEP 2142 states: “to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.” It is respectfully submitted that the combination of Cox and Shigeo fails to present a *prima facie* case of obviousness.

Claim 1 recites a method of positioning an object at a required position on a first object table in a lithographic projection apparatus, comprising, *inter alia*, “measuring a displacement between the first position of the object and a required position of the object on the first object table, removing the object from the first object table, and then *translating the removed object*, the first object table, or both, relative to each other *by substantially the measured displacement*, in a *direction substantially parallel to the plane of the first object table*.”

In response to the Amendment dated August 11, 2006, the Examiner indicates that “Applicant’s arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.” The Examiner has withdrawn the rejection of the claims under 35 U.S.C. §103(a) based on Shigeo and Brink *et al.* (U.S. Pat. No. 7,778,275) (hereinafter “Brink”) but now believes that independent claims 1 and 11 are obvious in view of Cox and Shigeo. As will be discussed below, this is, beyond question, clearly not the case.

First, Applicant is at a loss as to how the teachings of Cox are remotely relevant to the subject matter recited in claim 1. The Examiner states in the Office Action “with respect to claim 1, Cox discloses object place on a first position, measuring a displacement, placing the object at the required position, (*see* col. 4, lines 35-40, where it states that an object MA is

placed on the first object table MT, and there is a poison mechanism PM for accurately positioning the mask MA “object,” also, *see* col. 2, lines 45-54, wherein it states that the position mechanism to move the corresponding object table to compensate the movements of the projection system) as claimed.” (*See* page 3, lines 1-6 of the Office Action, emphasis added). **This is an incorrect characterization of the teachings of Cox.** Specifically:

Col. 2, lines 45-54 of Cox states:

a control mechanism responsive to the acceleration signal, for generating at least one control signal to control at least one of the positioning mechanisms so as to move the corresponding object table, thereby to compensate for movements of the projection system

Col. 4, lines 35-40 of Cox states:

a first object table (mask table) MT provided with a mask holder for holding a mask MA (e.g. a reticle), and connected to a first positioning mechanism PM for accurately positioning the mask with respect to item PL

Thus, all that is disclosed in Cox is a control mechanism to move the object table with respect to the projection system PL. However, these features are not those that are recited in claim 1.

For example, claim 1 does not recite “object place on a first position;” rather claim 1 recites “placing an object at a first position on the first object table.” The “position” that the Examiner is referring to in Cox is not a position on the first object table, as recited in claim 1, but a position with respect to the projection system.

As another example, claim 1 does not recite “measuring a displacement;” rather claim 1 recites “measuring a displacement between the first position of the object and a required position of the object on the first object table.” The “displacement” that the Examiner is referring to in Cox is not a displacement between the first position of the object and a required position of the object on the first object table, as recited in claim 1, but a displacement of the object table with respect to the projection lens.

In yet another example, claim 1 does not recite “placing the object at the required position”; rather claim 1 recites “placing the object at substantially the required position on the first object table.” The “placing” that the Examiner is referring to in Cox is not a “placing of the object at substantially the required position on the first object table,” as recited in

claim 1, but a positioning of the substrate table at a desired position with respect to the projection system.

Applicant wishes to remind the Examiner that “the identical invention must be shown in as complete detail as is contained in the ... claim.” (*See* MPEP §2131, citing Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989), emphasis added). MPEP §2131 also indicates that “the elements must be arranged as required by the claim.” (*See* MPEP §2131, citing In re Bond, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990), emphasis added). The Office Action does not meet these requirements.

In addition, by virtue of stating at page 3, lines 7-10, of the Office Action that “Cox fails to explicitly disclose, the displacement is measured with respect to the first object table, translating the object relative to the object table, and removing the object from the first object table in order to placing it back on to the first object table,” the Office Action illustrates that indeed Cox is completely irrelevant to the claimed subject matter.

The Examiner relies on Shigeo as allegedly remedying the deficiencies of Cox. The Examiner states “Shigeo teaches the displacement is measured with respect to the first object table, (*see* the constitution the rotation angles and the Figure 8c) and translating the object relative to the object table, removing the object from the first object table in order to placing it back on to the table, (*see* the constitution the reticle 12 is taken out “remove” and the stage is turned and place it back at the required position, after the reticle is turned in the direction by an angle “translating the object relative to the object table”), as claimed.” Applicant respectfully disagrees with this determination and submits that Shigeo is incapable of curing the deficiencies noted above regarding Cox.

Shigeo merely discloses removing the reticle 12 from the stage 11, rotating the stage 11, placing the reticle 12 back on the stage 11 and rotating the stage 11 in the reverse direction to return the reticle 12 to its original condition. (*See* Abstract and FIG. 8 of Shigeo). Shigeo, therefore, only teaches “rotating” the stage 11 and does not, in any way, teach *translating* the removed object, the first object table, or both, relative to each other *by substantially the measured displacement, in a direction substantially parallel to the plane of the object table*, as required by claim 1.

The Office Action equates the language “translating the removed object, the first object table, or both, relative to each other by substantially the measured displacement, in a direction substantially parallel to the plane of the first object table” of claim 1 with rotating the stage 11. Applicant respectfully disagrees with this determination.

MPEP 2111.01 states “words of the claim must be given their plain meaning unless **>the plain meaning is inconsistent with< the specification. *In re Zletz*, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989); *Chef America, Inc. v. Lamb-Weston, Inc.*, 358 F.3d 1371, 1372, 69 USPQ2d 1857 (Fed. Cir. 2004) (**Ordinary, simple English words whose meaning is clear and unquestionable**, absent any indication that their use in a particular context changes their meaning, **are construed to mean exactly what they say**.) (Emphasis added). “The ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention.” (See, e.g., MPEP §2111.01 citing *Phillips v. AWH Corp.*, 75 USPQ2d 1321 (Fed. Cir. 2005) (*en banc*), emphasis added). The term “translation” is defined as (1) “a transformation of coordinates in which the new axes are parallel to the old ones” or (2) a “uniform motion of a body in a straight line.” (See Merriam Webster Dictionary). The term “rotation” is defined as “the action or process of rotating on or as if on an axis or center” or (2) “the angular displacement required to return a rotating body or figure to its original orientation.” (See Merriam Webster Dictionary). The English definition of the term “rotating” is consistent with that of the specification. As such, one of ordinary skill in the art would readily understand that “translating the removed object, the first object table, or both, relative to each other by substantially the measured displacement, in a direction substantially parallel to the plane of the first object table” is not the same as rotating a stage. Stating otherwise would give an interpretation of the term “translation” that is inconsistent with (1) the English definition of this term, (2) the definition used in the specification and (3) the interpretation that those skilled in the art would reach. Thus, Shigeo does not disclose, teach or suggest “***translating*** the removed object, the first object table, or both, relative to each other.”

Moreover, Shigeo specifically teaches that if rotation angle ϕ_1 is greater than an allowable value, the stage 11 is rotated by a “mechanically limit angle ϕ_2 ”. As such, Shigeo is incapable of teaching translating the removed object, the first object table, or both, relative to each other ***by substantially the measured displacement***, as required by claim 1.

For at least these reasons, Applicant submits that none of the applied references teach the claimed combination of elements recited by claim 1. Accordingly, the combination of Cox and Shigeo fails to present a *prima facie* case of obviousness.

Furthermore, the Applicant respectfully disagrees with the Examiner’s position that Cox and Shigeo “are analogous because they are solving the similar problem of lithography.” **It is not clear what “similar problem” the Examiner is referring to in the Office Action.**

Cox merely discloses a feedforward system to correct motions of the lens unit in a specific frequency band, *e.g.*, in the vicinity of the eigenfrequency of the lens.” (*See, e.g.*, col. 2, lines 60-67 of Cox). Cox also discloses a control mechanism responsive to the acceleration signal to compensate for movements of the projection system. By contrast, Shigeo discloses positioning a reticle at high speed on the reticle table. (*See, e.g.*, FIGS. 8a-e of Shigeo). Accordingly, for at least this reason, the combination of Cox and Shigeo fails to present a *prima facie* case of obviousness.

Furthermore, in order to rely on equivalence as a rationale supporting an obviousness rejection, the equivalency must be recognized in the prior art, and cannot be based on Applicant’s disclosure or the mere fact that the components at issue are functional or mechanical equivalents. (*See, e.g.*, MPEP §2144.06 citing *In re Ruff*, 256 F.2d 590, 118 USPQ 340 (CCPA 1958)). There is no teaching or suggestion in Cox and/or Shigeo that the alignment of the mask table with respect to the projection system and the alignment of a reticle on a reticle table “have the same problem.” Therefore, in the absence of impermissible hindsight based on Applicant’s own specification, there is no reason as to why one of ordinary skill in the art would “combine the two references.” Therefore, for at least this reason, claim 1 is not obvious in view of the cited references.

Claim 11 is patentable over Cox, Shigeo and a combination thereof at least by virtue of its dependency from claim 1 and for the features recited therein. Namely, claim 11 is patentable over Cox, Shigeo and a combination thereof at least because this claim recites a method of positioning a substrate at a required position on a substrate table, said method comprising “placing the substrate at a first position on the substrate table; measuring a displacement between the first position of the substrate and a required position of the substrate on the substrate table; removing the substrate from the substrate table; translating the substrate, the substrate table, or both, relative to each other by substantially the displacement, in a direction substantially parallel to the plane of the substrate table; and placing the substrate at substantially the required position on the substrate table.” For at least similar reasons as provided above for claim 1, it is respectfully submitted that the combination of Cox and Shigeo fails to present a *prima facie* case of obviousness.

The Examiner summarily asserts that claim 11 is rejected for the same reasons as claim 1. Applicant strenuously disagrees.

Claim 11 is directed to positioning a *substrate* at a required position on a *substrate table*. To this end, claim 11 specifically and positively recites measuring a displacement

between the first position of the *substrate* and a required position of the *substrate* on the *substrate table*, removing the *substrate* from the *substrate table*, and translating the *substrate*, the *substrate table*, or both, relative to each other by substantially the displacement, in a direction substantially parallel to the plane of the *substrate table*. There is absolutely nothing in either Cox and Shigeo that has anything to do with the positioning, measuring, removing, or translating a *substrate* or *substrate table*, as these references are specifically dedicated to the alignment of reticles or masks.

Accordingly, reconsideration and withdrawal of the rejection of claims 1 and 11 under 35 U.S.C. §103(a) based on Cox in view of Shigeo are respectfully requested.

Claims 2-7, 9-10 and 14-20 were rejected under 35 U.S.C. §103(a) based on Cox in view of Shigeo and Brink. The rejection is respectfully traversed.

Claims 2-7 and 9-10 are patentable over Cox, Shigeo and a combination thereof at least by virtue of their dependency from claim 1 and for the additional features recited therein. Namely, claims 2-7 and 9-10 are patentable over Cox, Shigeo and a combination thereof at least because these claims recite a method of positioning an object at a required position on a first object table in a lithographic projection apparatus, comprising, *inter alia*, measuring a displacement between the first position of the object and a required position of the object on the first object table, removing the object from the first object table, and then *translating the removed object*, the first object table, or both, relative to each other *by substantially the measured displacement*, in a *direction substantially parallel to the plane of the first object table*. Similarly, claims 14-20 are patentable over Cox, Shigeo and a combination thereof at least by virtue of their dependency from claim 1 and for the additional features recited therein. Namely, claims 2-7 and 9-10 are patentable over Cox, Shigeo and a combination thereof at least because these claims recite a method of positioning a substrate at a required position on a substrate table, said method comprising “placing the substrate at a first position on the substrate table; measuring a displacement between the first position of the substrate and a required position of the substrate on the substrate table; removing the substrate from the substrate table; translating the substrate, the substrate table, or both, relative to each other by substantially the displacement, in a direction substantially parallel to the plane of the substrate table; and placing the substrate at substantially the required position on the substrate table.”

Brink fails to remedy the deficiencies of Cox and Shigeo. First of all, Brink is directed to aligning a mask MA with a substrate W – which is clearly different from

positioning an object at a required position on a first object table, as required by claim 1. What Brink does disclose is that alignment system AS₁ determines the relative position of mask mark M₂ to substrate mark P₁ in which the mask MA (construed by the Examiner as corresponding to the claimed “object”) remains on the mask table MT and the substrate W remains on the substrate table WT. (*See, e.g.*, col. 8, lines 6-9, lines 23-35 and FIG. 3 of Brink). Brink further discloses that drive systems then move the mask MA and the substrate W relative to each other so that substrate mark P₁ coincides with mask mark M₂. (*See, e.g.*, col. 8, lines 58-63 of Brink). In other words, Brink merely provides moving the mask table MT with the mask MA relative to the substrate table WT with substrate W.

In so doing, Brink does not, in any way, teach or suggest translating the object, the first object table, or both, relative to each other by substantially the measured displacement, in a direction substantially parallel to the plane of the first object table, as required by claim 1. That is, nowhere does Brink remotely suggest *translating the mask MA (“object”) relative to the mask table MT (“object table”)* - much less doing so, by substantially the measured displacement, in a direction substantially parallel to the plane of the first object table. Brink ‘275 only discloses moving the mask table MT with the mask MA relative to the substrate table WT with substrate W.

Accordingly, any proper combination of Cox, Shigeo and Brink cannot result, in any way, in the invention of claims 2-7, 9-10 and 14-20. Thus, the combination of Cox, Shigeo and Brink fails to present a *prima facie* case of obviousness.

Furthermore, Applicant respectfully disagrees with the Examiner’s position that Cox, Shigeo and Brink “are analogous because they are solving the similar problem of lithography.” **It is not clear what “similar problem” the Examiner is referring to in the Office Action.** Cox merely discloses a control mechanism responsive to the acceleration signal to compensate for movements of the projection system. Shigeo discloses positioning a reticle at high speed on the reticle table. (*See, e.g.*, FIGS. 8a-e of Shigeo). By contrast, Brink discloses aligning a mask MA with a substrate W. Accordingly, for at least this reason, the combination of Cox and Shigeo fails to present a *prima facie* case of obviousness.

Furthermore, in order to rely on equivalence as a rationale supporting an obviousness rejection, the equivalency must be recognized in the prior art, and cannot be based on applicant’s disclosure or the mere fact that the components at issue are functional or mechanical equivalents. (*See, e.g.*, MPEP §2144.06 citing In re Ruff, 256 F.2d 590, 118 USPQ 340 (CCPA 1958)). There is no teaching or suggestion in Cox and/or Shigeo and/or

Brink that the alignment of the mask table with respect to the projection system, the alignment of a reticle on a reticle table and the alignment of the mask with respect to a substrate "have the same problem." Therefore, in the absence of impermissible hindsight based on Applicant's own specification, there is no reason as to why one of ordinary skill in the art would "combine the two references." Therefore, for at least this reason, claims 2-7, 9-10 and 14-20 are not obvious in view of the cited references.

Accordingly, reconsideration and withdrawal of the rejection of claims 2-7, 9-10 and 14-20 under 35 U.S.C. §103(a) based on Cox in view of Shigeo and Brink are respectfully requested.

All matters having been addressed and in view of the foregoing, Applicant respectfully requests the entry of this Amendment, the Examiner's reconsideration of this application, and the immediate allowance of all pending claims.

Applicant's Counsel remains ready to assist the Examiner in any way to facilitate and expedite the prosecution of this matter. If any point remains in issue in which the Examiner feels may be best resolved through a personal or telephone interview, please contact the Undersigned at the telephone number listed below.

Please charge any fees associated with the submission of this paper to Deposit Account Number 03-3975. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Respectfully submitted,

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